IS 4046 (Part 2) : 2013
(Reaffirmed 2018)

भारतीय मानक

वस्त्रादि — पुरुषों के लिए सूती चढ्ढी — विशिष्टि

भाग 2 सादी बुनी

(पहला पुनरीक्षण)

Indian Standard

TEXTILES — GENTS' COTTON BRIEFS — SPECIFICATION

PART 2 PLAIN KNITTED

(First Revision)

ICS 61.020

B U R E A U O F I N D I A N S T A N D A R D S
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NEW DELHI 110002

December 2013 **Price Group 4**

Hosiery Sectional Committee, TXD 10

FOREWORD

This Indian Standard (Part 2) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

This standard was originally published in 1996 and has been revised again to incorporate the following major changes:

a) Requirement for elastic strap has been modified.
b) Constructional particular of the briefs fabric has been modified.
c) Tolerances on the dimensions of the briefs have been modified.
d) Scouring loss requirement has been deleted.
e) Requirement for colour fastness to washing and rubbing has been modified.
f) Marking requirements has been modified.

Briefs are tight fitting underwear without leg portion.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — GENTS' COTTON BRIEFS — SPECIFICATION

PART 2 PLAIN KNITTED

(First Revision)

1 SCOPE

1.1 This standard (Part 2) prescribes the constructional details and other particulars of bleached or dyed plain knitted gent's cotton briefs.

1.2 This standard does not prescribe the general appearance, lustre, feel and shade of briefs (*see also* **5.3**).

2 REFERENCES

The standards given below contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TERMINOLOGY

For the purpose of this standard the definition given in IS 3596 shall apply.

4 MANUFACTURE

4.1 General Design

The design and shape of the briefs shall be as shown in Fig. 1 for Type I and Fig. 2 for Type II. The briefs shall be tailored out of well and evenly plain knitted fabric. The fabric shall be bleached or dyed and shall conform to construction particulars given in Table 1.

4.1.1 The mass of the brief, in g/m^2, shall be determined by the method given in **B-4**.

4.2 Elastic Strap

The briefs shall have outer woven elastic strap stitched at the waist band or inner woven elastic strap shall be formed by the folding the edges of the fabric to a depth of minimum 18 mm and stitching it with flat stitches. In case of latter a cotton tape preferably confirming to IS 1895 or a suitable tape made out of same fabric as that is used for fabricating the briefs shall be provided in waist fold used for tying purposes. It shall be at least 30 cm longer than the corresponding waist girth. Braided elastic strap at the thigh openings may also be provided, if required by the buyer. The outer and inner elastic strap shall conform to the following parameters:

a) *Outer elastic strap:*
   1) Width of strap shall be minimum 25 mm.
   2) Minimum mass/100 m of finished strap shall be 1.7 kg.
   3) Minimum number of ends of covered rubber in the strap shall be 20.
   4) In 250 mm of finished strap, each covered rubber thread shall have a minimum of 160 mm of rubber core of not less than 0.6 mm diameter.
   5) The minimum elongation of covered rubber shall be 160 percent under a load of 225 g with respect to specimen length of 100 mm.

b) *Inner elastic strap:*
   1) Width of strap shall be minimum 18 mm.
   2) Minimum mass/100 m of finished strap shall be 0.85 kg.

Table 1 Construction Particulars of Plain Knitted Fabrics
(*Clause* 4.1)

Sl No.	Gauge of Machine[1)]	Approximate Count of Yarn-Cotton Count tex	*Mass/m*^{2} g *Min*
(1)	(2)	(3)	(4)
i)	24 (Fine)	30s (19.5) - 40s (14.5)	115
ii)	26 (Super fine)	34s (17.0) - 50s (12.0)	110
iii)	28 (Extra Super fine)	40s (14.5) - 50s (12.0)	120

[1)] As determined by number of needles per 2.5 cm.

3) Minimum number of ends of covered rubber in the strap shall be 12.
4) In 250 mm of finished strap, each covered rubber thread shall have a minimum of 160 mm of rubber core of not less than 0.6 mm diameter.
5) The minimum elongation of covered rubber shall be 160 percent under a load of 225 g with respect to specimen length of 100 mm.

4.3 Seams and Stitches

4.3.1 The type of stitches and count of sewing thread used for stitching various portions of briefs shall be as given in Table 2. The sewing thread shall conform to IS 1720.

4.3.2 All cotton sewing threads used for stitching shall be bleached or dyed according to the shade of briefs. Sewing thread of cross shades may also be used, if agreed to between the buyer and the seller.

4.4 Freedom from Defects

The briefs shall be free from fabrication defects such as loose threads, missing stitches, oil stains, defective stitching, uneven dyeing, stains or any other defect which may significantly mar the appearance or serviceability.

5 REQUIREMENTS

5.1 Dimensions

The dimensions of briefs of different sizes for Types I and II, when measured by method given in **B-2** shall conform to requirements of Tables 3 and 4 respectively (*see* Figs. 1 and 2).

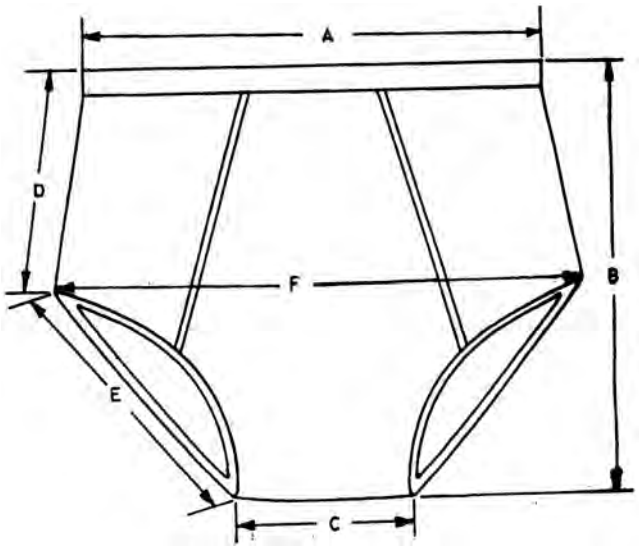

FIG. 1 TYPICAL SHAPE OF TYPE I BRIEFS

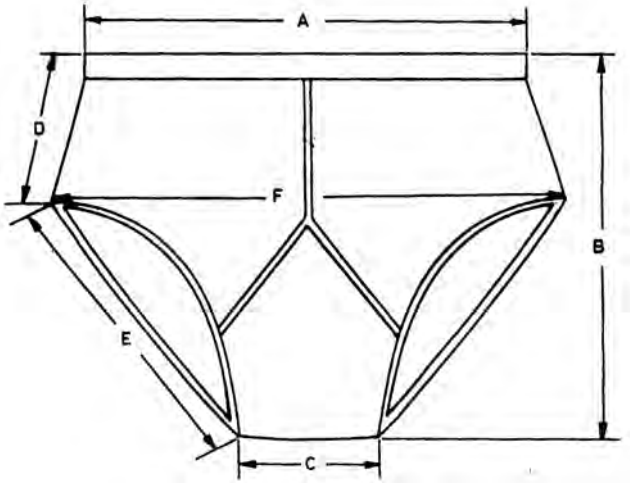

FIG. 2 TYPICAL SHAPE OF TYPE II BRIEFS

NOTE — The size of the brief is designated by the hip measurement of the wearers, for example, 85 size briefs are meant for wearers having hip girth of 85 cm.

5.2 Other requirements of briefs shall be as given in Table 5.

5.3 SEALED SAMPLE

In case a sample has been agreed upon and sealed to illustrate or specify the indeterminable characteristics, such as general appearance, lustre, shade and feel of briefs, the supply shall be in conformity with the sample in such respects.

5.3.1 Custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

6 MARKING

6.1 A suitable cloth label made of woven cotton, taffeta/ satin or fusing type shall be fastened or fused to each brief at the inside near the waist band on which the following shall be indicated by printing:

Table 2 Seams and Stitches
(*Clause* 4.3.1)

Sl No.	Portion to be Stitched	Type of Stitch	No. of Stitches per cm *Min*	Count of Sewing Thread	
				In Needler(s)	In Looper(s)
(1)	(2)	(3)	(4)	(5)	(6)
i)	Joining at the seat and side seams	Flat lock	4	Three strands of 60s/3 cotton Court (100 dtex × 3)	Two strands of 40s/2 count cotton count (145 dtex × 2) or 60s/3 cotton count (100 dtex × 3)
ii)	Hemming at the front opening	Flat lock	4	-do-	-do-
iii)	Joining of elastic straps to waist band	Flat lock	4	One strands of 40s/2 cotton count (145 dtex × 2)	One strands of 40s/2 cotton count (145 dtex × 2)

Table 3 Dimensions of Type I Briefs
(*Clause* 5.1 *and* Fig. 1)
All dimensions in centimetres.

Sl No.	Size	Width Across Waist *A*	Front Length *B*	Width at Bottom *C*	Side Length *D*	Thigh Opening *E*	Width Across Seat *F*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	75	28.5	26	10.0	13	19.5	33
ii)	80	30.5	28	11.0	14	20.5	34
iii)	85	31.5	30	12.0	15	22.5	35
iv)	90	33.5	31	12.5	16	23.5	37
v)	95	35.5	33	13.0	17	24.5	38
vi)	100	36.5	34	14.0	18	26.5	40
Tolerance		**± 2.0**	**± 2.0**	**± 2.0**	**–3 +1**	**+3 –1**	**± 2.0**

Table 4 Dimensions of Type II Briefs
(*Clause* 5.1 *and* Fig. 2)
All dimensions in centimetres.

Sl No.	Size	Width Across Waist *A*	Front Length *B*	Width at Bottom *C*	Side Length *D*	Thigh Opening *E*	Width Across Seat *F*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	75	26.0	23.5	8.5	9.0	19.5	32.0
ii)	80	27.0	25.0	9.0	10.0	21.0	34.0
iii)	85	30.0	26.5	9.5	11.0	22.0	36.0
iv)	90	32.0	28.5	10.0	11.0	23.0	39.0
v)	95	35.0	30.0	10.5	12.0	24.0	41.0
vi)	100	37.0	31.5	11.5	12.5	25.0	43.0
Tolerance		**± 2.0**	**± 2.0**	**± 2.0**	**+3 –1**	**+1 –3**	**± 2.0**

Table 5 Requirements of Briefs
(*Clause* 5.2)

Sl No. (1)	Characteristic (2)	Requirement (3)	Methods of Test, Ref to (4)
i)	Dimensional change due to relaxation, percent, *Max*:		
	a) Wales	5	**B-3**
	b) Courses	5	**B-3**
ii)	*p*H value of aqueous extract (Cold method)	6.0 - 8.0	IS 1390
iii)	Colour fastness of dyed brief to:		
	a) Light (*see* Note)	4 or better	IS 2454 or IS 686
	b) Washing, test C (3):		
	1) Change in colour	4 or better	IS/ISO 105 - C10
	2) Staining on adjacent fabric	4 or better	
	c) Perspiration (Acidic and alkaline):		IS 971
	1) Change in colour	4 or better	
	2) Staining on adjacent fabric	4 or better	
	d) Rubbing:		IS 766
	1) Dry	4 or better	
	2) Wet	3 or better	

NOTE — In case of dispute colour fastness to light shall be determined by the method prescribed in IS 686.

a) Size of brief;
b) Indication of source of manufacture;
c) Washing instructions, if any; and
d) Any other information as required by the buyer.

6.2 BIS Certification Marking

The briefs may also be marked with the Standard Mark.

6.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and Rules and Regulations made thereunder. The details of the conditions under which a license for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

7 PACKING

Briefs shall be packed preferably in bales or cases in accordance with IS 3325 or IS 3086 as the case may be.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Lot

In any consignment, all the briefs of same size and manufactured from plain knitted fabric of same count of yarn, knitted on machine of same gauge and delivered to a buyer against one despatch note shall constitute a lot.

8.1.1 The conformity of a lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from the lot.

8.2 Unless otherwise agreed to between the buyer and the seller, number of briefs depending upon the size of the lot shall be selected at random from the lot to constitute the gross sample. The number of briefs so selected shall be in accordance with col 3 of Table 6.

8.3 The number of briefs to be tested and criterion for conformity for each of the characteristics shall be as follows:

Characteristics	*Number of Briefs to be Tested*	*Criterion for conformity*
Freedom from defects, mass/m^2 and dimensions	*See* col 3 of Table 6	Non-conforming briefs square meter and dimensions not to exceed the corresponding number given in col 4 of Table 6
Dimensional change and *p*H value of aqueous extract	*See* col 5 of Table 6	All the briefs to satisfy the relevant requirements
Colour fastness	1 each of the same colour, shade and/or print for lot size up to 500 and 2 above 500	All the specimens to satisfy the relevant requirements

Table 6 Sample Size and Permissible Number of Non-Conforming Briefs
(*Clauses* 8.2 *and* 8.3)

Sl No.	Number of Briefs in the Lot	Physical Characteristics		Number of Briefs to be Inspected (Other Requirements)
		Number of Briefs to be Inspected	Permissible Number of Non-Conforming Briefs	
(1)	(2)	(3)	(4)	(5)
i)	Up to 300	10	0	3
ii)	301 - 500	20	1	5
iii)	501 - 1 000	32	3	5
iv)	1 001 and above	50	5	8

ANNEX A
(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*	*IS No.*	*Title*
686 : 1985	Methods for determination of colour fastness of textile materials to daylight (*first revision*)	1895 : 1982	Cotton NEWAR (*second revision*)
766 : 1988	Method for determination of colour fastness of textile materials to rubbing (*first revision*)	2454 : 1985	Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp) (*first revision*)
971 : 1983	Method for determination of colour fastness of textile materials to perspiration (*first revision*)	3086 : 1965	Code for seaworthy packaging of cotton hosiery yarn and goods
1390 : 1983	Methods for determination of *p*H value of aqueous extracts of textile materials (*first revision*)	3325 : 1965	Code for inland packaging of cotton hosiery yarn and goods
1720 : 1978	Specification for cotton sewing threads (*second revision*)	3596 : 1967	Glossary of terms relating to hosiery
		6359 : 1971	Method for conditioning of textiles
		IS/ISO105 – C10 2006	Textiles — Tests for colour fastness: Part C10 Colour fastness to washing with soap or soap and soda

ANNEX B
(*Clauses* 4.1.1, 5.1 *and* 5.2)

METHODS OF TEST

B-1 CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

The test specimens shall be tested in prevailing atmospheric conditions. In case of dispute, the samples shall be conditioned and tested in the standard atmosphere as given in IS 6359.

B-2 DIMENSIONS

B-2.1 Procedure

Take each brief constituting the test sample. Lay it flat on a table. Remove by hand all creases and wrinkles without distorting it. Measure to the nearest 0.5 cm the dimensions given.

B-3 DIMENSIONAL CHANGES DUE TO RELAXATION

B-3.1 Marking of Test Specimens

B-3.1.1 Take a brief from the test sample. Cut from it a test specimen measuring approximately 20 cm × 20 cm in such a way that the two of its sides are parallel in the direction of wales and the other two parallel in the direction of courses. Mark the direction of wales and courses in the test specimen.

B-3.1.2 Mark centrally on the test specimen by means of indelible ink or a fast dyed cotton sewing thread an area 10 cm × 10 cm with two of its sides in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface. Carefully remove by hand all creases and wrinkles. Within this area, mark six pairs of marks, three pairs each in the wales direction and the courses direction in such way that the distance between each pair of marks is the same.

B-3.2 Procedure

B-3.2.1 Place test specimen on a glass plate and carefully remove by hand all creases and wrinkles without distorting it and place the other glass plate on the test specimen. Measure, correct to the, nearest millimetre, the distance between each pair of marks separately.

B-3.2.2 Lay the test specimen flat in a tray of suitable size and of depth minimum 10 cm. Soak it under a head of 25 mm of water containing 0.5 percent suitable wetting agent at 30 to 35°C for 2 h. Drain out the water and remove the test specimen carefully so that it is not stretched and lay it flat on a smooth surface. Remove the excess of water by an absorbent material and dry it at room temperature.

B-3.2.3 After drying, condition the test specimen to moisture equilibrium at room temperature. Place it on the glass plate. Carefully remove all wrinkles and creases and place the other glass plate on the test specimen. Measure, correct to the nearest millimetre, the distance between each pair of marks separately.

B-3.3 Calculation

B-3.3.1 Calculate separately the percentage of dimensional change both in the direction of wales and in the direction of courses by the following formula:

$$S = \frac{100 \times (a - b)}{a}$$

where

S = dimensional change, percent;

a = distance between a pair of marks (along the wales or courses direction as the case may be) before soaking; and

b = distance between the same pair of marks after soaking.

B-3.3.2 Calculate separately the dimensional change between all the three pairs of marks in the direction of wales and in the direction of courses and calculate the average dimensional change in each direction.

B-4 DETERMINATION OF MASS PER SQUARE METER

B-4.1 Take a brief from the test sample. Lay it flat on a table. Remove by hand all creases and wrinkles without distorting the specimen. Cut from it a test specimen measuring 20 cm × 20 cm in such a way that the two of its sides are parallel in the direction of wales and the other two parallel in the direction of courses.

B-4.2 After conditioning the test specimen to moisture equilibrium at room temperature, measure the weight of the specimen nearest to 0.01 g using a suitable balance.

B-4.3 Calculation

Calculate the mass per unit area of the specimen by the following formula:

$$M = \frac{W}{0.04}$$

where

M = mass of the specimen, in g/m^2; and

W = weight of 20 cm × 20 cm specimen, in g.

Similarly, determine the mass per unit area of at least four more test specimens and calculate the average of all the values obtained.

ANNEX C
(*Foreword*)

COMMITTEE COMPOSITION

Hosiery Sectional Committee, TXD 10

Organization	*Representative(s)*
The South India Textile Research Association, Coimbatore	Dr Prakash Vasudevan (***Chairman***) Shri K. Balasubramaniyan (*Alternate*)
Apparel Export Promotion Council, Gurgaon	Shri V. Vijay Kumar
Champion Knitting Co, Tirupur	Shri R. Ramalingam
Chitralaya Banian Co, Tirupur	Shri T. R. Vijay Kumar Shri S. N. Kathir (*Alternate*)
Directorate General of Supplies & Disposals, New Delhi	Additional Director General (QA)
Exlan Knitters, Tirupur	Shri K. Ramaswamy Shri K. R. Kumar (*Alternate*)
Fresh Knitting Company, Tirupur	Shri K. Arunachalam Shri M. Raja Gounder (*Alternate*)
Githanjali Knitting Mills, Tirupur	Shri N. Shanmuga Kumar
Ministry of Defence (DGQA), New Delhi	Shri P. C. Basu Shri T. P. Singh (*Alternate*)
Ministry of Defence (R&D), New Delhi	Shri Ashok Kumar Yadav Shrimati Debarati Bhattacharjee (*Alternate*)
Office of the Development Commissioner (MSME), New Delhi	Shri Kuldeep Singh
Office of the Textile Commissioner, Mumbai	Shri C. S. Singh Shri P. Arivindan (*Alternate*)
Oxo Apparels, Tirupur	Shri G. Selva Kumar Shri V. Daniel Richard (*Alternate*)
P. V. S. Knitting, Tirupur	Shri P. Murugasamy Shri N. Devamani (*Alternate*)
Pin Knitting Co, Tirupur	Shri Siva Kumar Shri S. Sameul Sudhakaran (*Alternate*)
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Textiles Committee, Mumbai	Joint Director Deputy Director (*Alternate*)
The South India Hosiery Manufacturers' Association, Tirupur	Shri Emperor Punnuswamy Shri V. Gunasekaran (*Alternate*)
Tirupur Exporters Association, Tirupur	Shri G. Karthikeyan Shri P. Vidhya Prakash (*Alternate*)
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Member Secretary
Shri J. K. Gupta
Scientist 'C' (Textiles), BIS

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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